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instead of an *Os Petrosum*, have something analogous, but cartilaginous; and the Auditory Bones are of a tartareous kind of friable and easily maceable Substance.

XI. *A Journal of the Shocks of Earthquakes felt near Newbury in New-England, from the Year 1727. to the Year 1741. communicated in a Letter from the Rev^d Mr. Matthias Plant to the Rev^d Dr. Bearcroft.*

S I R,

Read Feb. 11.
1741-2.

IT may be acceptable, if I give an Account of the Earthquake, as I took it down precisely at every time I heard it.

Oct. 29. 1727. being the Lord's-Day, about 40 Minutes past Ten the same Evening, there came a great rumbling Noise; but before the Noise was heard, or Shock perceived, our Bricks upon the Hearth rose up about three quarters of a Foot, and seem'd to fall down and loll the other way, which was in half a Minute attended with the Noise or Burst. The Tops of our Chimneys, Stone-fences, were thrown down; and in some Places (in the lower Grounds, about three Miles from my House, where I dwell) the Earth opened, and threw out some Hundred loads of Earth, of a different Colour from that near the Surface, something darker than your white Marl in *England*; and in many Places, opened dry Land into good Springs, which remain to this Day; and dried up Springs, which never came again.

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It continued roaring, bursting, and shocking our Houses all that Night. Though the first was much the loudest and most terrible, yet eight more, that came that Night, were loud, and roared like a Cannon at a Distance. It continued roaring and bursting 12 times in a Day and Night, until *Thursday* in the said Week, and then was not so frequent; but upon *Friday* in the Evening, and about Midnight, and about Break of Day upon *Saturday*, three very loud Roarings: We had the roaring Noise upon *Saturday*, *Sunday*, *Monday*, about 10 in the Morning, though much abated in the Noise.

Nov. 7. being *Tuesday*, about 11, it roared very loud, and gave our Houses a great Shock; and continued shocking from three times to six every Day and Night until the 12th of *November*, when it was heard twice in one Hour in the Afternoon, from half an Hour after Three to half an Hour after Four. Sometimes the Roaring of the Earthquake was loud, other times it seem'd at a Distance, and much abated. Upon the 13th of *November*, being *Monday*, two Hours before Day-break, the Roaring was loud, and shook the Houses. Upon *Wednesday* following, half an Hour past Two in the Afternoon, there was a Roaring, but not so loud. It continued sometimes roaring loud, and shocking our Houses, for five, six, to ten times a Week, until the 17th of *December* following; and then about half an Hour past 10 in the Evening, being *Sunday*, it roared very loud, and shook our Houses very much; another Shock the next Morning about Four, much abated.

January 3. 1727-8. about Nine at Night, an easy Shock.

Jan.

Jan. 6. Saturday, there were five Shocks, attended with the Roaring, from about Nine at Night to Four on *Sunday* Morning, which I heard; and some People told me, who lived in the low Grounds, that for the Space of about half an Hour, it continually kept roaring every half Minute or Minute.

Upon *Wednesday Jan. 24.* about half an Hour after Nine at Night, it roared exceeding loud, and was followed in half a Minute with Roaring much abated in the Noise.

Jan. 28. Sunday, about half an Hour after Six in the Morning, another easy Shock, and another about Ten the same Morning, easy: On the same Night about one, a loud Roaring and Shock.

Jan. 29. I heard it twice, though easy, that Day.

Tuesday Jan. 30. About Two in the Afternoon, there was a very great Roaring, equal to any but the first, for Terror: It shook our Houses so, as that many People were afraid of their falling down; Pewter, &c. was shook off our Dressers; the People that were in the Church for Evening Service, ran out; the lead Windows rattled to such a Degree, as that I thought they would all be broke. And there was another Shock the same Day, about an Hour and half after, though much abated.

Feb. 21. About half an Hour past 12 at Midnight, a considerable loud Roaring with a Shock.

Feb. 29. Such another.

March 17. About Three in the Morning, *Sunday*, an easy Shock.

March 19. Forty Minutes past One at Noon, a small Noise; at Nine the same Night, a small Noise with a Shock.

April 28. 1728. Sunday, about Five in the Afternoon, a small Noise, but perceivable.

May 12. Sunday Morning, about 40 Minutes past Nine, a long and loud Roaring, and shook the Houses.

May 17. Friday, about Eight in the Evening, a long and loud Roaring shook our Houses.

May 22. Wednesday, several small Roarings in the Morning; but about Ten the same Morning, long and loud, and shook our Houses.

May 24. Friday, about Eleven at Night, loud and long Roaring, shook our Houses.

Thursday June 6. Saturday 8. about Three in each Morning, a long and loud Roaring.

Tuesday June 11. Nine in the Morning, a small Noise.

July 3. about Two in the Morning, and *July 23. Monday* Morning, about Break of Day, very loud and long, shook our Houses.—— Besides these Times I have mentioned, it has been often heard by me; but the Noise was small, so forbore to set them down: I had Thoughts to have added no more Account of the Noise and Repetition of the Earthquake in my Church-book; but acquainting my People with what I had done, they prevailed upon me to proceed again, which I did upon *March 19. 1728-9. Wednesday*, betwixt Two and Three in the Afternoon, it was loud and long, shook our Houses, being repeated twice in an Instant; and this was the longest and loudest Roaring, and the greatest Shock, that I ever heard, the first excepted, and that upon the 30th of *January*, mentioned before. We had several small Shocks in this Interim.——But upon
Sept.

Sept. 8. 1729. Monday, about half an Hour past Three, it was loud and long.

Sept. 29. Monday, about half an Hour past Four in the Afternoon, loud and long.

Oct. 29. I heard it twice this Night; one of the times was about the same time of Night the first Shock was.

Nov. 14. about Eight in the Morning, loud and long, attended with two Bursts like unto two sudden Claps of Thunder; shook our Houses.

Nov. 27. about Eight in the Evening, a very great Roaring, and a great Shock: It was heard at *Ipswich*, about 14 Miles distant.

February 8. 1729-30. about Eight in the Evening, a small Shock, about Midnight loud and long, and gave our Houses a great Shock.

Feb. 26. Thursday, about a quarter before Two in the Morning, the Noise was repeated twice in about one Minute: The first was loud and long, and shook our Houses equal to any but the first Shock; the second Noise was low, and seemingly at a Distance.

April 12. 1730. About Eight in the Evening, *Sunday*, a very loud and long Noise, and a great Shock, equal, I thought, to any for Length and Noise, the first excepted.

July 28. About Nine in the Morning, a sudden and loud Roaring and Shock.

Aug. 15. About Eight in the Morning, a Shock of the Earthquake, twice repeated in a Moment of Time.

Nov. 6. About 11 at Noon, it was loud and long, and gave my House a Jar.

Nov.

Nov. 14. Saturday, about Nine in the Morning, a small Noise and Rumbling, no Shock.

Nov. 25. About 20 Minutes past Eight at-Night, a loud and long Roaring, and gave my House a considerable Shock.

Dec. 6. About a quarter of an Hour before 11 at Night, *Sunday*, it was loud, and roared long, and made our Houses jar.

Dec. 11. Friday, about a quarter before Seven at Night, there was a small Burst, but shook my House.

Saturday Dec. 19. about half an Hour past 10 at Night, the Earthquake did very much shake our Houses, without any Noise or Roaring, more than ever before, the first time excepted. It was felt at *Boston* 40 Miles, at *Piscataqua* 22 Miles, almost equal to what it was with us.

January 7. 1730-1. About Seven at Night it was loud and long, shook our Houses.

Jan. 11. About Midnight, loud and long, shook our Houses.

March 7. Sunday, about Five in the Evening, we heard the Noise, but no Shock.

May 28. 1731. About Nine in the Morning, I heard the Noise of the Earthquake very distinctly, but could not perceive, that it shook.

July 5. Monday Morning about Sun-rise, it was loud and long, shook our Houses.

Aug. 21. Saturday, Nine in the Evening, the Noise was small and short.

Oct. 1. Monday, about 11 at Night, loud and long, shook our Houses.

February 7. 1731-2. About Seven at Night, a great Shock, shook our Houses.

Septem-

September 5. 1732. Tuesday, about Noon, we had a severe Shock, which was perceived at *Boston* and *Piscataqua*, but attended with little or no Noise. The same Earthquake was heard at *Mountreal* in *Canada*, at the same Time, and about the same Hour of the Day, and did Damage to 185 Houses, killed seven Persons, and hurt five others; and it was heard there several times afterwards, only in the Night, as the News-Papers gave us this Account.

Dec. 30. In the Morning we had a Shock, and it had been heard by some People several times within three Weeks before.

Thursday March 1. A loud and long Noise of it.

October 19. 1733. A loud and long Noise about Midnight.

January 16. Wednesday, 1733-4. About 20 Minutes past 10 at Night, a loud and long Roaring.

June 29. 1734. About a Quarter past Three in the Afternoon, there was somewhat of a Noise of it.

Oct. 9. About 20 Minutes past 10 in the Morning, a small Shock.

Nov. 11. or 12. for it was about Midnight, we had the loudest Noise, and the greatest Shock, except the first: It was long, very awful and terrible.

Nov. 16. About Six in the Morning, there was a small Shock.

February 2. 1735-6. About a quarter of an Hour before Six in the Evening, there was a pretty loud Noise and Shock.

March 21. About half an Hour past 10 in the Morning, it was somewhat loud.

July 13. 1736. About Three quarters after Nine in the Morning, the Noise of it was loud.

Oct.

Oct. 1. Friday, about half an Hour past One at Midnight, it was loud and long, and a great Shock, twice repeated in an Instant.

Nov. 12. About Two in the Morning, there was a Shock with the Noise, and about Six the same Morning it was something louder.

February 6. 1736 7. About a quarter past Four in the Afternoon, we had a considerable Shock.

September 9. 1737. Friday, about 20 Minutes past 10 in the Morning, it was very loud and long, and shook our Houses very much.

Dec. 7. A little before 11 in the Night, the Ground shook very much, but heard no Noise. Upon the same 7th of *December*, at *New-York*, they had three severe Shocks of an Earthquake in the Night: It threw down there some Chimneys, and made the Bells to toll so as to be heard. At the same time the said Shock and Noise was felt and heard in many other Places.

August 2. 1739. We had a great Shock; it made my House shake much, and the Windows jar. It was about half an Hour past Two in the Morning: I think I never heard but two either louder, or longer, or greater.

Sunday, Dec. 14. 1740. About 35 Minutes after Six in the Morning, there was heard a pretty loud Noise of the Earthquake.

Sunday, Jan. 18. 1740-1. About Four in the Morning, there was heard the Noise of the Earthquake.

Sunday, Jan. 25. 1740-1. About 10 Minutes before Four in the Afternoon, there was a Shock of the Earthquake, with a loud rumbling Noise. This is the last that has been heard, (and I pray God I may never

never hear any more such and so long). I have omitted to set some down that were small, or such as I did not hear myself: I was very exact to the Time, so that what Account I have sent you is most certainly true.

I thought an exact Account of so remarkable a Judgment, continued so long, might be acceptable: And although the first Night was the most terrible, as the Surprise was sudden; yet there never happen'd one Shock amongst us, but what occasion'd some Alteration at that time in every Person's Countenance and Constitution; and which way soever any Person's Face happen'd to be, that way the Noise of the Earthquake appear'd to him: And I have frequently, in my Conversation with sundry Persons, been told by them, that for a few Minutes before a Shock of it came, they could foretel it by an Alteration in their Stomachs; occasion'd (as I suppose) by an Alteration in the Air: I attest to the Truth of the Thing by my own Experience. You'll please, Reverend Doctor, to excuse the Length of it, if not acceptable, from

*Your most obedient and
Humble Servant,*

Matt. Plant.

P O S T S C R I P T.

I forgot to tell you, Sir, that (except the first Shock) these frequent Repetitions of the Roaring and Shocks of the Earthquake were upon *Merrimack River*, and seldom extended above seven or eight Miles Distance from, or 20 or 30 up the said River;

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those Instances only excepted, which I have mention'd in the Relation ; and the first Shock of it was greater with us than any-where else in *New-England* ; and the Tops of Chimneys, and Stone-fences, were thrown down only in these Parts.

XII. *An Account of Mr. Sutton's Invention and Method of Changing the Air in the Hold, and other close Parts of a Ship ; communicated to the Royal Society by Richard Mead, M.D. Physician to His MAJESTY, Fellow of the Royal Society, and of the Royal College of Physicians, LONDON.*

Read Feb. 11.
1741-2.

IT is found by daily Experience, that Air shut up and confined in a close Place, without a Succession and fresh Supply of it, becomes unwholsome, and unfit for the Use of Life.

This is more sensibly so, if any stagnating Water be pent up with it.

But it grows still worse, if such an Air as this is made use of in Respiration, that is, becomes moister and hotter, by passing and repassing through the Lungs.

These bad Effects, in different Degrees, according to the different Manner in which Air is inclosed, are observed in many Cases ; particularly in deep Wells and Caverns of the Earth, in Prisons or close Houses, where People are shut up with Heat and Nastiness : But most of all in large Ships, in which,
with